

PRIORITIES FOR PREVENTION RESEARCH AT NIMH

**A Report
by the
National Advisory Mental Health Council
Workgroup on
Mental Disorders Prevention Research**

National Institutes of Health
National Institute of Mental Health

ROSTER: NAMHC WORKGROUP ON MENTAL DISORDERS PREVENTION RESEARCH

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Dear Dr. Hyman:

I am pleased to present to the National Advisory Mental Health Council (NAMHC) the final report of the NAMHC Workgroup on Mental Disorders Prevention Research. The Workgroup reviewed the current NIMH prevention research portfolio, identified its gaps, and made selected strategic recommendations about research directions in the near future. We did not, however, undertake a complete reconceptualization of prevention research relevant to NIMH. That work had already been done by the Institute of Medicine and by earlier NIMH advisory groups. Rather, we started with the current de facto definition of prevention research and, at your request, attempted to broaden its focus and scope. We recommend an expanded definition that includes research on a broadened array of mental disorders and the prevention of comorbidities, relapse, and disability, as well as preventive services research. The essence of our report is integration: across phases of prevention research (pre-intervention, intervention, and services); across disciplines (biological, psychological, social); across levels of intervention (individual psychological, social); across prevention and treatment research; and across disorders.

We examined carefully the scope and balance of research in the current NIMH portfolio and found that it focused on a few disorders, and then only on a few approaches toward their prevention. Prevention research has had a promising beginning, and risk-factor, risk process, and intervention research have all been productive in some areas. But much more can and should be done. Our recommendations provide strategic directions for pre-intervention, intervention, and services research.

The recent reorganization of NIMH holds considerable promise for prevention research, but the Workgroup is concerned that the integration required to move the field forward might be lost. Therefore, we recommend ongoing mechanisms to ensure leadership and continuity in prevention research, including continuing the Prevention Research Consortium, convening a newly constituted standing Prevention Research Advisory Group, and providing leadership in cross-institute and cross-agency coordination. Our work is not done. We propose that it be carried forward in a series of summit meetings that will summarize the state of knowledge about risk and protective factors and processes as well as intervention strategies for specific disorders. These meetings should also encourage a unified view within the field of prevention, and bring together a variety of prevention investigators across mental and other chronic disorders, substance abuse disorders, and infectious diseases.

We thank you for this opportunity and hope that our report is helpful.

Sincerely,

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Clinical Social Work Federation
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Mental Health Association of Southeastern Pennsylvania
National Alliance for the Mentally Ill
National Mental Health Association
National Prevention Coalition
Society for Prevention Research
World Federation for Mental Health

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EXECUTIVE SUMMARY

The Workgroup on Mental Disorders Prevention Research of the National Advisory Mental Health Council (NAMHC) was charged by the Director of the National Institute of Mental Health (NIMH) to examine the NIMH research portfolio on the prevention of mental disorders, identify research gaps and opportunities, and indicate priorities for future research on prevention.

The Workgroup believes that the field is ready to initiate a third generation of prevention research building on prior research accomplishments and integrating these with advances in the biomedical, behavioral, and cognitive sciences. The Workgroup's 14 recommendations are intended to pave the way for this important next step.

A Framework for Modern Prevention Science

> Recommendation 1: Adopt an Expanded Definition of Prevention Research

The Workgroup recommends the adoption of a broadened definition of prevention research that (a) expands pre-intervention research beyond traditional risk factors by including research that can encompass basic biological, psychological, and sociocultural risk factors; (b) includes the prevention of relapse, co-occurring illnesses, disability, and the consequences of severe mental illness for families; and (c) emphasizes the critical importance of integration across pre-intervention, preventive intervention, and preventive services research.

Other principles guiding modern prevention science include the importance of:

- o a developmental perspective across the life span;
- o multiple, interacting causal factors;
- o drawing on multiple disciplines in conceptualizing prevention;
- o systematic and rapid translation of research from basic risk-factor studies to real-life applications in clinical and community settings;
- o a broad range of intervention approaches, including pharmacologic, psychological, family, social system, and public policy changes;
- o public health need and scientific opportunity as the driving forces;
- o preventing comorbidity, especially between mental disorders and substance abuse;
- o preventing relapse, disability, and other consequences of mental illness;
- o testing both the safety and efficacy of preventive interventions.

Gaps and Opportunities

The Workgroup reviewed and analyzed the FY 1996 NIMH prevention research portfolio. All prevention grant abstracts judged by NIMH staff as relevant to pre-intervention, intervention, and services research were reviewed and were characterized by topic area, target group populations, age and type of research subjects, disorders or conditions, and methods. Based on this work, key gaps and opportunities in prevention research were identified.

Gaps in *pre-intervention research*

- o Data are insufficient from population-based, prospective cohort, high-risk, and family studies to provide an empirical basis for choosing the timing and target groups for prevention strategies, particularly those using a selective or indicated approach.¹
- o The risk-factor research portfolio is unevenly balanced with respect to both the public health significance and the severity of particular target outcomes.
- o The amount of risk-factor research focused on specific population subgroups (e.g., specific combinations of cultures, genders, and/or developmental stages) is very limited.
- o Little interdisciplinary collaboration exists within and among key domains of risk-factor research relevant to prevention.
- o Dramatic advances have been made in knowledge about the role of genetic and biologic risk factors for mental disorders. However, little systematic research has explored the interaction of these factors with psychological and environmental factors or the potential translation of knowledge about these risk factors into applied prevention research. Nor has it explored the diverse impacts--positive and negative--expected from such programs.

Gaps in *preventive intervention research*

- o Many treatment and intervention studies currently in the NIMH portfolio have strong relevance for prevention but are not characterized as such and are not included in planning for prevention.

¹ Selective interventions are targeted to individuals or groups with a higher-than-average risk of developing mental disorders; indicated interventions are targeted to people with minimal but detectable mental illness signs or symptoms who do not have a diagnosable disorder.

- o Studies on relapse prevention and comorbidity prevention are not currently included in planning prevention research at the indicated level or beyond.
- o Scientific initiatives to advance each level of intervention and bridge across levels have not been systematically identified.
- o Preventive intervention in the research portfolio has tended to focus on a limited number of disorders, such as depression and conduct disorder, while relatively less attention has been paid to development of interventions to prevent other mental disorders, such as anxiety disorders, and their comorbidities.
- o Preventive intervention strategies have primarily focused on individual-level processes rather than the broader context in which they occur, (e.g., family, school, and community).
- o Research is lacking on methods of collaborating with communities to develop prevention trials and to encourage their adoption of well-evaluated prevention programs once the research is completed.
- o Despite the rapid development of knowledge about mechanisms of early cognitive development, very few preventive trials focus on intervening during prenatal or early infancy periods, when malleability may be high.
- o Few research interventions to prevent recurrence or co-occurring illness focus on children or adolescents, despite considerable evidence of the recurrent nature of many mental disorders and the accretion of co-occurring disorders across childhood and adolescence.
- o There is a lack of systematic attention to significant variation in the effects of preventive interventions related to cultures, genders, and life stages.

Gaps in *preventive services research*

In the area of mental health services research (characterized as organization and financing studies, clinical services studies examining effectiveness issues, and dissemination research), ***virtually no preventive services research of any kind was found under NIMH sponsorship. In addition, the following gaps related to preventive services research were identified:***

- o There are few scientists in the prevention field with training in health economics. This background is critical for adequate evaluation of the costs and benefits of preventive intervention programs.

o While there is substantial effort to identify the cost-effectiveness of treatment and other services, there has been little translation of cost-benefit analyses to prevention of relapse, comorbidity, and long-term care.

o Basic data are scant on the cost and impact of mental disorders compared with other chronic disorders.

Major Research Initiatives

The Workgroup recommended nine major *research* initiatives based on its assessment of the current NIMH research portfolio, scientific opportunity, and public health need:

- > **Rec. 2: Strengthen the epidemiologic foundations of prevention research.**
- > **Rec. 3: Stimulate pre-intervention and intervention studies of early childhood risks for mental disorders and other adverse developmental outcomes.**
- > **Rec. 4: Expand research on the prevention of depression and anxiety across the life span.**
- > **Rec. 5: Refine and advance the empirical basis for conduct disorder prevention research**
- > **Rec. 6. Broaden disorders and populations targeted for prevention research.**
- > **Rec. 7: Expand studies on comorbidity prevention.**
- > **Rec. 8: Develop a program of preventive services research, including prevention policy research.**
- > **Rec. 9: Encourage and support long-term followup in prevention research.**
- > **Rec. 10: Build prevention research capacity, especially through training grants.**

Leadership and Continuity in Prevention Research Activities

The reorganization of NIMH presents an opportunity and several challenges for prevention research. The Workgroup was concerned that the reorganization might divide and diffuse responsibility for identifying new scientific opportunities and encouraging the systematic transformation of promising leads into practical prevention interventions. To remedy this, the Workgroup developed the following recommendations:

- > **Rec. 11: Provide scientific leadership for prevention research by continuing the NIMH staff's Prevention Research Consortium and convening a newly constituted standing Prevention Research Advisory Group (PRAG), which represents expertise in epidemiology, developmental psychopathology, methodology, and the conduct of community-based prevention trials**
- > **Rec. 12: Provide leadership in prevention grant review to ensure that experts in epidemiology, developmental psychopathology, methodology, and the conduct of community-based prevention trials are involved in review.**
- > **Rec. 13: Provide leadership for cross-agency linkages between NIMH prevention efforts and the Department of Education, as well as linkages with other components of the National Institutes of Health (e.g., NIDA, NIAAA, and NICHD).**
- > **Rec. 14: Provide leadership for prevention research dissemination.**

Unfinished Business

Charting a new course for NIMH prevention research is an ongoing process. To provide continuing impetus for NIMH prevention research, the Workgroup recommends that the Prevention Research Advisory Group collaborate with the Prevention Research Consortium to plan and execute in the next year a series of Prevention Research Summits to summarize the state of knowledge about risk and protective factors and processes, preventive interventions, and prevention research for each major mental disorder, as well as common risk and protective factors across disorders. The Summits should recommend to the NAMHC the highest research priorities across disorders and phases of research, based on public health need and scientific opportunity. There is also great potential to stimulate cross-fertilization among researchers studying mental disorders, other chronic illnesses, and infectious diseases, and to integrate across a wide range of intervention technologies, including biological, behavioral, organizational, community- and policy-based approaches.

I. INTRODUCTION

Background

Prevention research has become an important new frontier in the study of mental disorders. The public health toll of mental disorders is becoming more widely recognized: Depression is the fourth leading cause of illness-related disability in the world, and schizophrenia and other psychotic disorders are among the most debilitating and persistent diseases. Rapid advances in the basic biological, psychological, and social sciences have provided unprecedented scientific opportunities to understand and prevent these and other mental disorders. These developments close the last substantial gap in the recognition that mental disorders are to be investigated, understood, treated, and prevented essentially as are all other medical illnesses. This new confluence of mental and medical health research is of mutual benefit. Across both fields and at all levels of research there is increasing appreciation of the importance of interdisciplinary approaches and the value of including and integrating contributions from behavioral and social science research, along with findings from molecular biology, genetics, biomedicine, and biotechnology.

Over the last 50 years, with the spectacular advances in medical treatments facilitated by modern scientific research, the burden of medical illness has largely shifted from acute and curable infections to complex chronic diseases that lack definitive cures, some of which stem from unhealthful life styles. These latter diseases include some of the leading causes of death, such as heart disease and lung cancer. There has also been enormous progress in identifying the role of genetic, biologic, social, and behavioral risk factors and their interaction in the etiology of these chronic diseases. The newly emerging infectious diseases, such as AIDS, as well as the threat of drug resistant re-emerging infectious diseases, such as tuberculosis, also have been shown to have major behavioral components.

Given the current burden of mental and medical illness, in which suffering, disability, and death are prominent and few definitive cures exist, a heightened focus on prevention is essential. For many physical diseases a high priority is being given to rigorous programs of prevention research. It is time for prevention research on mental disorders to assume similar prominence.

Building on two generations of prevention efforts in the mental health field, this is an opportune moment for NIMH to launch a new era of prevention activities as an integral part of its research program. Advances in scientific knowledge, research paradigms, concepts, and a range of new methods now offer great promise for a third generation of prevention intervention--one that is scientifically sophisticated and addressed to a broadened range of troubling and largely neglected areas of mental disorder.

The *first generation* of efforts to prevent mental disorder began in the 1930s when, as an outgrowth of the turn-of-the-century mental hygiene movement, the focus gradually expanded beyond ameliorating the plight of those in asylums to include the prevention of many forms of social and emotional maladjustment. The new goal was to assure the well-being and “positive mental health” of the general population through primary-prevention interventions aimed at creating health-promoting environments for all. These efforts were based on humanitarian concern, but had few, if any, research underpinnings.

The *second generation* of interventions to prevent mental disorder, which began in the late 1960s, reflected the impact of a growing health and mental health research knowledge base. Some scientists retained their broad-based emphasis on primary prevention, while others began to target specific “at-risk” groups for study and intervention. During the 1960s there had been a burgeoning of research on the causes, mechanisms, and effects of stress on bodily and mental functioning. “At-risk” persons were defined as those who would predictably experience periods of substantial life stress, such as domestic violence, divorce, bereavement, or unemployment as precursors of mental distress or disorder. Changing behavior for health also became an active area of study and prevention during the same period. Those studies placed a strong emphasis on preventing lung cancer and heart disease through programs to prevent or reduce smoking, obesity, high cholesterol intake, and sedentary life styles. Despite the strengthened scientific foundations for prevention, both in research and in preventive services delivery, the mental health field’s capabilities lagged behind the public health need.

In 1978, the second-generation prevention efforts were characterized by the President’s Commission on Mental Health (PCMH) as, “... unfocused and uncoordinated.” In response, the PCMH recommended that, as a first step, “...A Center for Prevention” should be established at NIMH, with primary prevention as its major activity. The PCMH mandate under which the NIMH Prevention Center was established further noted that programs sponsored by the Center “... should be aimed at high-risk populations and high-risk situations limited to strategies where prospects for successful intervention are greatest.” The PCMH also suggested giving priority to programs for children. The NIMH Center for Prevention Research and its programmatic successors continued to function under this mandate for nearly 20 years, promoting considerable progress in building the scientific foundation of an interdisciplinary field of prevention research in areas of epidemiology, human development, and intervention research methodology.

Scientifically rigorous studies are now yielding promising evidence of the efficacy of preventive interventions. Recent meta-analytic reviews of preventive interventions support the efficacy of many approaches to prevention, while pointing to significant gaps and future directions for research. Findings from individual experimental trials illustrate the potential power of a number of preventive approaches. For example,

long-term evaluations of experimental trials of home-visitation programs with high-risk mothers and infants have provided evidence that such programs are effective in reducing antisocial behavior problems. One 15-year followup of a randomized trial of a home-visitation program found that the high-risk mothers in the program had significantly fewer verified reports of child abuse and neglect, fewer arrests for criminal behavior, less impaired behavior from alcohol or drug abuse, and fewer subsequent pregnancies--all of which are risk factors for children's development of conduct problems.

Programs that provide brief training in social cognitive skills to pre-adolescents with high levels of depressive symptoms have successfully reduced their rates of such symptoms over a 2-year followup. Experimental trials have also shown the efficacy of preventive interventions with populations undergoing stressful life transitions. For example, a structured job-search intervention with the recently unemployed significantly reduced the incidence of severe levels of depressive symptoms over a 2 ½-year followup.

Despite the promise of a number of prevention trials, much work is needed to achieve a scientifically grounded knowledge base that can aid in reducing the incidence and prevalence of mental disorders in the foreseeable future. A continuing awareness of the intriguing but still largely unfulfilled promise of prevention research on mental disorders stimulated the creation in 1985 of a congressionally mandated Office of Prevention within NIMH, as well as several recent assessments of this second generation of prevention research. Two reviews have been particularly influential: *Reducing Risks for Mental Disorders: Frontiers for Prevention Intervention Research*, the 1994 report of the Institute of Medicine (IOM), and *A Plan for Prevention Research for the National Institute of Mental Health*, the 1996 report to the NAMHC by the NIMH Ad Hoc Committee on Prevention Research. The latter report incorporated recommendations from the IOM report and from the 1993 NIMH report, *The Prevention of Mental Disorders: A National Research Agenda* by the NIMH Prevention Research Steering Committee. Although the current report is based upon a broader definition and scope of prevention research than those that preceded it, the Workgroup is indebted to those prior efforts, which have formed its conceptual foundation.

A *third generation* of prevention activity is now proposed. The field is ready to build on prior prevention research accomplishments and integrate these with advances in the biomedical, behavioral, and cognitive sciences. These basic science findings can form the foundation for understanding more precisely the origins of the full spectrum of major mental disorders and for identifying their risk and buffering factors. These findings can be translated into preventive intervention strategies that can be tested and, if efficacious, disseminated. The field is also ready to expand the prevention terrain to include a broader array of major mental illnesses, and to include a focus on preventing relapse, disability, and the comorbid conditions prominently associated with mental disorders, as well as preventing the incidence of disorders. In this next generation,

scientifically based preventive strategies will, at last, have significant impact on the public's mental health.

Workgroup Charge and Composition

The NAMHC Workgroup on Mental Disorders Prevention Research was charged with examining the NIMH research portfolio on the prevention of mental disorders, identifying research gaps and opportunities, and indicating priorities for future research (see Workgroup Charge, Appendix A). In that charge, NIMH Director Dr. Steven Hyman noted that at least two major issues gave rise to the Workgroup's creation: "recognition of the value of the prevention research perspective (including its developmental approach and its focus on nonclinical as well as clinical settings); and a growing realization that severe mental disorders, which are now underrepresented in the NIMH prevention research portfolio, are not likely to be amenable to primary prevention interventions with our current knowledge base."

The Workgroup, led by Dr. Thomas Coates, consisted of NAMHC members as well as ad hoc participants. The 12 appointed members included researchers with experience in prevention research in areas of mental disorders, substance abuse, and AIDS. Their disciplines spanned public health, psychology, child and adult psychiatry, pediatrics, and epidemiology. Through their participation in earlier efforts to assess NIMH prevention research, two of the members provided an important link with past reports on prevention research.

II. A FRAMEWORK FOR MODERN PREVENTION SCIENCE

During the course of the Workgroup's deliberations, a number of implicit but shared assumptions about a broad and integrated prevention research field became explicit. Together, these guiding principles, stated below, provide the framework underpinning both the Workgroup's assessment of the current state of NIMH prevention research and its choice of initiatives to advance the field.

A. For research planning purposes, any definition of prevention research must encompass the *full spectrum* of relevant research across three major domains.

The first issue examined by the Workgroup was the definition of prevention research relevant to mental disorders. It was soon apparent that prevention research in the mental health field has no universally accepted definition, although two public health concepts are widely used within the prevention research community: the traditional public health distinctions of primary, secondary and tertiary prevention, as well as Gordon's (1987) characterization of preventive interventions as universal, selective, and indicated. There has been a tendency to regard primary prevention (i.e., intervention before the onset of symptoms) as the only true form of prevention. However, this perspective fails to recognize the mental health field's need for effective prevention approaches both *before and after* symptoms become apparent.

The 1994 Institute of Medicine report and the 1996 prevention report to NAMHC based on it adopted a definition of prevention that adapted Gordon's terms as follows:

"Universal preventive interventions for mental disorders are targeted to the general public or a whole population group that has not been identified on the basis of universal risk.

Selective preventive interventions are targeted to individuals or a sub-group of the population whose risk of developing mental disorders is significantly higher than average. The risk may be imminent, or it may be a lifetime risk.

Indicated preventive interventions are targeted to high-risk individuals who are identified as having minimal but detectable signs or symptoms foreshadowing mental disorder, or biological markers indicating predisposition for the mental disorder, but who do not meet DSM-III-R diagnostic levels at the current time."

The definition excluded all individuals with full-blown disorders. It also excluded the domain of pre-intervention research (defined on the next page) because it was focused solely on preventive *interventions*.

A concern with the narrowness of current prevention definitions led Dr. Hyman to ask the Workgroup to consider “expanding the domain of NIMH prevention research beyond ‘primary prevention’ to include: a) the early identification of symptoms in a variety of mental disorders as a basis for early intervention and the prevention of possible comorbidity (e.g., alcoholism as a complication of social phobia) or complication (e.g., agoraphobia as a result of panic disorder); and b) the use of interdisciplinary (including both pharmacologic and behavioral) approaches in relapse prevention in mental disorders with recurrent or worsening courses.”

The task of developing a new NIMH prevention research definition consonant with this broadened perspective was assigned to the NIMH Prevention Research Consortium,² an internal NIMH body consisting of representatives from all NIMH research programs germane to prevention research. The Workgroup used successive refinements of the Consortium’s definition to guide the classification and analysis of NIMH prevention research portfolio. The Workgroup has enthusiastically adopted the Consortium’s definition of the domain of prevention (with some small changes), as presented below:

A major mission of the National Institute of Mental Health (NIMH) is to conduct and support research to improve mental health and prevent mental disorders, behaviors symptomatic of disorder, and related consequences, including research on the prevention of HIV transmission and the consequences of HIV infection and AIDS. An underlying assumption of NIMH prevention research is that human behavior is subject to biological and environmental influences that affect the course of human development. Prevention research can be broadly characterized as seeking to understand and influence the developmental trajectory from the earliest formation of the nervous system throughout the course of life in order to prevent mental disorders and promote mental health.

Advances in prevention research result from an interactive process among three domains: pre-intervention research, preventive intervention research, and preventive service systems research.

Pre-intervention research involves basic social, behavioral, and biological, pre-clinical, clinical, and epidemiologic/public health studies that form the building blocks for preventive intervention research. This includes research on risk and protective factors and risk and protective processes to (1) identify basic mechanisms of biological, behavioral, and psychological change; (2) elucidate factors that increase or decrease the likelihood of developing target outcomes; (3) develop and test models of processes that

² The Consortium, initially co-led by Dr. Eve Mościcki, formerly Chief of the Prevention and Behavioral Medicine Research Branch, and Dr. Juan Ramos, Associate Director for Prevention, was created in late 1996 in response to recommendations in the 1996 NAMHC report on prevention research.

mediate and moderate the translation of risk into disorder, its course, and its consequences. Pre-intervention research also includes translating results from the preceding three areas into (4) intervention development research aimed at a) promoting research methods innovation and development, and b) designing, pilot testing, refining, and analyzing new preventive intervention strategies prior to testing in efficacy trials. The focus in pre-intervention research may range from individual-level outcomes to population-level outcomes, as in epidemiologic and other public health research.

Preventive intervention research is the core of prevention research because of its great potential for directly improving public health. It consists of preventive intervention efficacy and effectiveness trials involving participants who (1) have no current symptoms of mental disorder and were never symptomatic; (2) have current sub-clinical symptoms; (3) have a currently diagnosed disorder and/or were previously symptomatic—for them the emphasis is on prevention of relapse or recurrence; or (4) have a currently diagnosed disorder, with the emphasis on prevention of comorbidity or disability. The choice of prevention targets will depend on scientific opportunity, pre-intervention knowledge base, and the public health burden of the disorder to be prevented.

Efficacy trials test the extent to which a specific intervention produces positive results under near-ideal conditions. *Effectiveness trials* test the extent to which efficacious interventions have a beneficial effect when deployed in natural settings. Such trials usually are designed to test the generalizability of intervention effects for a defined population or service setting. Effectiveness trials may also include economic analyses, such as cost-benefit analyses; this research forms the bridge to *preventive service systems research*. Both efficacy and effectiveness studies can involve randomized, controlled trials, and both can focus on individual-level or on population-level outcomes in some community-based trials.

Preventive intervention research may target interventions based on risk and protective factors and processes unique to particular disorders as well as those common to a variety of outcomes. The interventions may be delivered through a variety of service system sectors, including the general health sector (e.g., primary care, health maintenance organizations), the specialty mental health sector, or through schools or other community settings and types of organizations. Preventive interventions may be delivered independently of other services, or as part of a package of services (e.g., preventively focused parenting interventions delivered in conjunction with pharmacologic and/or psychosocial treatment of parental depression). Research on preventive interventions may target individuals and/or broader levels of the social

environment, such as families, work or school settings, communities, and their social norms and policies.

Preventive service systems research is concerned with the study of effective preventive interventions within service systems. The focus of studies in this category is on the interactive effects of preventive interventions with organizational aspects of the service environment, such as system structures, including characteristics and skills of those providing care and of the populations being served, organizational culture and climate, and methods of financing services.

Preventive service systems research can include (1) studies of policies and procedures that facilitate or hinder the adoption and implementation of effective interventions, and research on the technology of effective dissemination; (2) studies of the effects of age, gender, ethnicity, or sociocultural factors that affect access to or use of available preventive interventions; and (3) studies of the costs associated with delivery of preventive interventions, as well as methods of financing such interventions. The focus of preventive service systems research is on contextual and system-level outcomes.

A diagram of the prevention research cycle described above, including the types of research and target populations, is presented in Figure 1. (available at <http://www.nimh.nih.gov/research/prevfg1.htm>) This expanded definition of prevention research reflects and reinforces the interdisciplinary nature of this research area, spanning genetics and neuroscience, psychology, psychiatry, clinical research, services research, and epidemiology. Figure 2. (available at <http://www.nimh.nih.gov/research/prevfg2.htm>) illustrates how interventions with each targeted population contribute to the common objective of reducing rates of disorder in the total population. Figure 3. (available at <http://www.nimh.nih.gov/research/prevfg3.htm>) shows the changing conceptual boundaries of prevention research across generations of prevention intervention.

The scientific opportunity presented by the expanded definition of prevention is that each type of prevention can make unique and complementary contributions to the overall public health goal of reducing rates of disorder in the population. Each of these strategies can reach different segments of the population with intervention strategies that are appropriately targeted at malleable risk and protective factors. Universal, selective, and indicated prevention strategies are needed to reach broad segments of the population at critical developmental periods in order to reduce the incidence of disorder. Despite these efforts, however, many people will still experience disorder, and prevention strategies are critically needed to prevent relapse and comorbid conditions as part of comprehensive treatment approaches. The Workgroup strongly

endorses a vigorous scientific research agenda on this full array of strategies--
universal, selective, indicated, relapse and comorbidity prevention
--to reduce rates of mental disorder in the population.

The Workgroup believes that this definition encompasses a vision of prevention research that should be shared by all relevant NIMH programs. **Therefore, the Workgroup's first recommendation is the following:**

Recommendation 1: Adopt an Expanded Definition of Prevention Research

o NIMH should adopt formally the expanded definition of prevention research developed by the NIMH Prevention Research Consortium, with the following conceptual implications for NIMH-sponsored research: a) expand pre-prevention or risk-factor research to include etiologic research that encompasses basic biological, psychological, and sociocultural factors as well as multiple interactive influences on behavior and its context; b) extend preventive intervention and service-level research to include prevention of relapse, comorbidity, disability, and the consequences of severe mental illness for families; and c) emphasize the critical importance of integration across pre-intervention, preventive intervention, and preventive services research.

It is important to note that **the new conceptualization of prevention represents an expansion of the prevention research agenda; it does *not* represent a decreased commitment to preventing mental disorders in people currently without symptoms or those who have never been mentally ill.**

B. A developmental perspective is a key component of prevention research

Research based on a developmental.³ perspective has yielded significant new insights into the paths, continuities, and changes in normal and pathological processes over the life span. The development and life course of mental disorder result from a complex interplay of biological and psychological processes as individuals interact with their changing environments. Prevention research must take into account these dynamic forces and the developmental trajectories to which they lead. These developmental processes need also to be viewed within an epidemiologic framework to understand how they affect incidence and prevalence of mental disorder in the population for different age groups.

Prevention research has already benefited from insights about the significance of

³ Although the term "developmental" often refers solely to child development, it is used here to indicate developmental stages across the life span.

predictable, normal developmental transitions (e.g., school transitions, puberty, retirement) as points of vulnerability and/or growth opportunity. The developmental consequences of non-normative life crises (e.g., divorce, job loss, bereavement, serious injury or illness) and the factors that protect against their potentially adverse effects on mental health are being studied as well. Findings from such studies are beginning to clarify the origins and timing of the onset of disorders, as well as strategic developmental points for intervention.

Because this body of knowledge is fundamental for research on prevention, it is essential to support *longitudinal studies* that can use both prospective long-term designs and strategic life-course data collection to track both lifetime developmental processes and the duration of intervention programs' intended and unintended effects.

C. Understanding the development of mental disorder requires knowledge of the influence of multiple interacting causal factors or processes rather than focus on a single causal agent . Some factors have a pathological influence and are associated with an increased risk for disorder, while others have a positive or protective influence and are associated with a decreased risk. Risk and protective factors include all levels of analysis--biological, psychological, and environmental. These factors may be uniquely associated with specific disorders. However, some may be common across a range of disorders, and these deserve special emphasis.

D. A complete prevention research program must encourage the systematic translation of research knowledge from basic risk-factor studies to real-life applications in clinical and community settings. NIMH-sponsored prevention research should contribute to the systematic growth and effective application of empirical knowledge in all of the following areas of investigation: a) using findings from basic laboratory studies and rigorous clinical and epidemiologic studies (risk and protective factors must be identified and empirically validated as a basis for selecting populations for preventive interventions by determining which risk processes have the greatest promise as potentially malleable and powerful points of intervention); b) demonstrating in field trials that particular preventive interventions are effective and documenting their cost-effectiveness; c) revealing and overcoming barriers to the dissemination and adoption of cost-effective interventions; and d) identifying the characteristics of prevention service systems best suited for wider dissemination and adoption.

E. A broad range of potential preventive intervention approaches needs to be explored, including pharmacological, psychological, family process, and social system and policy changes. Preventive interventions can include all levels of approaches to producing change. Intervention approaches should be selected for their efficacy in changing processes involved in the development and recurrence of disorder and for the feasibility of delivering them in specific targeted populations. Often, the

combination of multiple approaches is needed to produce the desired preventive effect in a given population.

F. Public health need and scientific opportunity should be the key criteria guiding the allocation of research resources in NIMH, a research component of the Public Health Service. In prevention research, scientific priorities should be commensurate with the severity and prevalence of the disorders of interest, with priority given to those disorders that are both severe and relatively widespread, resulting in a heavy burden of illness on the population. Of equal importance is the criterion of scientific opportunity. Research resources in mental health should be primarily allocated where they can build upon emerging concepts, methods, or technologies that will significantly advance existing knowledge or open up promising new areas of investigation.

G. Prevention of mental disorders should include a focus on preventing conditions that are often comorbid with mental disorders, particularly substance abuse and physical illness. An Institute focus on discrete mental disorders should not preclude studies of common underlying risk factors that may contribute to multiple adverse outcomes. Studies of the effects of preventive interventions should include their impact on the burden of suffering from mental disorders and from co-occurring conditions.

H. Preventive intervention research should not simply be directed toward the prevention of a first episode, but must also include prevention of repeated subsequent episodes. Most mental disorders are relapsing or recurring in nature, and their personal and financial costs can be largely attributed to episodes that follow a first onset. Therefore, prevention of recurrence and relapse--including relapse after successful treatment--is an essential aspect of a public health strategy to reduce prevalence.

I. The contributions and collaborations of multiple disciplines are essential for scientific advances in prevention research. Prevention research requires the contributions and interactions of researchers from a broad range of disciplines, including psychiatry, psychology, social work, nursing, epidemiology, economics, genetics, and neuroscience, as well as sophisticated biostatistical and methodological expertise. This disciplinary diversity is especially important for understanding the development of mental disorders and accounting for the differential interactions and impacts of biologic processes and environmental influences, whether at the molecular or social ecological level. Prevention research studies need to integrate basic science (e.g., genetics and neuroscience) with behavioral and social science to explain complex phenomena such as why some mental disorders tend to aggregate in certain

families and not others who seem to be similar, and to facilitate translation of basic risk-factor research into prevention and treatment programs. In the next generation of prevention research, research in basic neuroscience, neuroimaging, neuroimmunology, pharmacology, cognitive psychology, and genetics will need to be integrated with epidemiologic, social, and psychological research on risk and protective factors for mental disorders in adults and children across diverse U.S. subcultures.

J. Both the safety and efficacy of preventive interventions should be tested.

Outcome domains measured should include those in which positive outcomes are expected as well as those in which negative, unintended effects might occur. This is equally important for psychopharmacologic and psychosocial interventions. For both, significant age, gender, and sociocultural factors may alter expected outcomes.

III. WORKGROUP METHODS AND KEY FINDINGS

Workgroup Methods

To carry out its charge, the Workgroup held eight formal meetings between January 1997 and January 1998, and invited presentations by representatives of all NIMH extramural research programs and by organizations with a particular interest in NIMH prevention research (see Acknowledgments). The Workgroup examined abstracts of the entire FY96 NIMH extramural research portfolio (excluding AIDS⁴) to identify the scope and balance of prevention research across Institute programs. In addition, interviews with NIMH program staff, and review of seminal books and papers helped to frame the Workgroup's deliberations in a context of scientific, professional, and consumer concerns.

The review and analysis of the FY 96 NIMH prevention research portfolio have been central to the Workgroup's deliberations. Rather than relying on pre-existing categorizations, the Workgroup asked leaders of all NIMH extramural research programs to code all their paid FY 96 grants as: 1) risk-factor research; 2) preventive intervention research; 3) preventive services research; or 4) not relevant to prevention. This coding was based upon the working definition of prevention developed by the NIMH Prevention Research Consortium.

The Workgroup members were then divided into three subcommittees corresponding to the three prevention research categories mentioned above (i.e., risk, intervention, services). They examined all grant abstracts in their topic area--across all NIMH research programs (except AIDS)--as well as examples of outstanding prevention research selected by NIMH program staff. The Workgroup subcommittees characterized grants in their topic areas by their target-group populations (e.g., universal, selective, indicated), by the age and type of research subjects, by disorders (or conditions) actually or potentially being targeted for prevention, by research methodology, and by other categories specific to their research domains (e.g., for the intervention subcommittee, by type of intervention). This analytic matrix provided a useful basis for describing broad patterns of research design and content-area emphasis within the NIMH prevention research grant program of FY 96.

However, the constraints of reviewing NIMH abstracts rather than full proposals precluded a rigorous scientific assessment of the quality of NIMH-supported prevention research. Also, resource constraints precluded a review of the current state of relevant

⁴ The research portfolio of the NIMH Office on AIDS, which had undergone several recent scientific and administrative reviews, was exempted from the Workgroup's review.

basic bioscientific research knowledge that might inform or invite preventive interventions for mental disorders. These constraints also precluded a systematic examination of the relation between the NIMH prevention research program and relevant studies being supported by other public and private funders.

It should also be noted that the organizational structure of NIMH underwent major changes between January 1997, when the Workgroup first convened, and January 1998, when the Workgroup held its final meeting. While developing its recommendations, the Workgroup attempted to keep abreast of these changes and to take into account their potential impact on the Institute's prevention research program. The Workgroup also sought to follow the emergent process of integrating NIMH grant review personnel and procedures with those of NIH. The Workgroup recognized, however, that its own timetable would not permit giving serious consideration to how an altered review process might affect mental health research in general, and prevention research in particular.

Key Findings

Presented below are the Workgroup's major findings regarding gaps in prevention research *within* the three major domains of prevention research: risk-factor (or pre-intervention) research; preventive intervention research; and preventive services research. An additional--and very important--potential gap should be noted: Prior to the NIMH reorganization, NIMH had few mechanisms in place to encourage and accelerate the transfer of research knowledge *across* prevention research domains. It is not yet clear how the reorganization has affected this issue. Given this uncertainty, administrative recommendations presented in Section V suggest ways to strengthen the transfer process.

Pre-Intervention Research

NIMH has an extensive portfolio of research related to the origins of mental disorders. As coded by NIMH program staff, some 850 NIMH research grants active in FY 96 were identified as being potentially relevant to risk-factor or pre-intervention research. The Workgroup's pre-intervention research subcommittee reviewed grant abstracts on risk and protective factors for the major psychiatric disorders and other relevant targets of prevention studies. Excluded from their review were abstracts on treatment or preventive intervention (which were reviewed by the preventive intervention research subcommittee), as well as animal studies and basic neuroscience.

To summarize the content and to identify gaps, Workgroup members analyzed the grant abstracts by multiple descriptive categories that included: target outcome (mental disorder or component, general functioning, psychological characteristics, social adjustment, or medical disorder); sample source (universal, selective, indicated);

demographic characteristics; study design (cross-sectional vs. longitudinal); and classes of risk factors based on either individual characteristics (e.g., demographic features, genetic risk status, developmental period, temperament and/or personality attributes, gender) or exposure to a stressor or situation (e.g., social context, violent crime, neighborhood and its resources, family, sociocultural factors).

Additional sources of this review included expert testimony to the Workgroup, review of recent literature on methodology and risk and protective factors for psychopathology, reports from advisory groups on prevention, and information on risk-factor research from several other agencies and foundations outside of NIMH.

Gaps in *pre-intervention* research

- o Sufficient data are lacking from population-based, prospective cohort, high-risk, and family studies to provide an empirical basis for choosing the timing and target groups for prevention strategies, particularly those using a selective or indicated approach.
- o The risk-factor research portfolio is unevenly balanced with respect to both the public health significance and the severity of particular target outcomes.
- o A relatively limited amount of risk-factor research is focused on populations with particular combinations of gender, culture, and developmental stage (such as adolescent girls in specific ethnic or cultural groups).
- o Little interdisciplinary collaboration exists among key domains of risk-factor research. Also, mechanisms are lacking for translating findings in basic science, genetics, and risk factor/pre-prevention research into applied prevention research.
- o Dramatic advances in have occurred in knowledge about the role of genetic and biologic risk factors for mental disorders. However, little systematic research has explored the interaction of these factors with psychological and environmental factors or the potential translation of knowledge about genetic and other biological risk factors into prevention intervention programs, or the diverse impacts--positive and negative--of such programs.

Preventive Intervention Research

The Workgroup obtained from all NIMH divisions and branches 188 abstracts of grants active in FY 1996 and nominated by NIMH staff as preventive interventions or as relevant to prevention intervention research. Preventive intervention research subcommittee members then coded these abstracts in categories to describe the type of preventive intervention, the disorder or condition being prevented, the proximal

outcomes of the intervention, the unit (e.g., individual, family) whose behavior is targeted for change; the population's developmental level, and the length of followup.

Gaps in *preventive intervention research*

- o Many preventive intervention studies currently in the NIMH portfolio are not characterized as such, and are not included in planning for prevention.
- o Studies on relapse prevention and comorbidity prevention are not currently included along with universal, selective, and indicated strategies in planning prevention research.
- o Scientific initiatives to advance each level of preventive intervention and bridge across levels have not been systematically identified.
- o Preventive intervention in the portfolio has tended to focus on a limited number of disorders, such as depression and conduct disorder, while relatively less attention has been paid to development of interventions to prevent other mental disorders, such as anxiety disorders and antisocial and borderline personality disorders.
- o Preventive intervention strategies have primarily focused on changing individual-level processes, giving less attention to change in other, larger units such as family, school, and community, and how these larger units interact with individual-level factors and with each other to lead to the development of mental disorders.
- o Research is lacking on methods of collaborating with communities to develop prevention trials and to encourage their adoption of well-evaluated prevention programs.
- o Very few preventive trials focus on intervening during prenatal or early infancy periods, when malleability may be high.
- o Few research interventions to prevent recurrence or comorbidity focus on children or adolescents, despite considerable evidence of the recurrence of many mental disorders and the development of comorbid disorders across childhood and adolescence.
- o There is a lack of systematic attention to the effects of preventive interventions across cultures, genders, and life stages.

Preventive Services Research

Gaps in *preventive services research*

- o Although NIMH has a relatively large and well-developed research program that examines mental health **treatment** services in large-scale, real-world settings, that program does not encompass research on **preventive** services. In fact, **a review of the NIMH research portfolio reveals that virtually no *preventive services research* of any kind is being sponsored by NIMH in any of the three major components of health services research: a) organization and financing; b) clinical services research; and c) dissemination research. Additional gaps related to preventive services research were identified :**
- o There are few scientists in the prevention field with training in health economics. This background is critical for adequate evaluation of the costs and benefits of preventive intervention programs.
- o While there is substantial effort to identify the cost-effectiveness of treatment and other mental health services, there has been little translation of cost-benefit analyses to preventive interventions.
- o Basic data are scant on the cost and impact of mental disorders compared with other chronic disorders.

IV. MAJOR RESEARCH INITIATIVES RECOMMENDED

Based upon the Workgroup's assessment of the current NIMH prevention research portfolio and the opportunities available to NIMH to advance prevention research in the coming decades, the following research initiatives are recommended for consideration by the National Advisory Mental Health Council and the Director of NIMH: ⁵

> Recommendation 2:

Strengthen Epidemiologic Foundations of Prevention Research

o NIMH must invest in obtaining fundamental epidemiologic information about the prevalence and incidence of mental disorders in the United States population across the life span and the factors that contribute to their onset and course. In addition, the Institute should begin planning for periodic monitoring surveys of mental disorders in adults—including geriatric populations—that can provide fundamental trend data on changes in patterns of mental illness over time. These data are essential to strengthen the empirical basis for selecting appropriate targets for prevention interventions and for assessing the potential social and personal impact of prevention efforts. Planning for obtaining the relevant data on children and youth should be coordinated with planning for the new NIMH-sponsored national epidemiological study of mental disorders in children and youth. NIMH should support the development of optimal methods for assessing mental disorders in the general population.

Until quite recently, adequate data were unobtainable on the magnitude and risk factors for mental disorders in children and adolescents in the community, and prospective evidence for the predictive significance of risk factors for the major mental disorders has been limited. However, advances in the classification and identification of mental disorders, combined with improvements in community survey methodology, now make it possible to obtain a more accurate picture of how mental disorders are distributed in the U.S. population at all stages of development, and how those disorders arise.

Two major epidemiologic surveys on adults sponsored by NIMH--the Epidemiologic Catchment Area (ECA) study and the National Comorbidity Survey (NCS)--have been invaluable resources for the field, but the ECA was conducted almost two decades ago, and the NCS conducted a decade ago. It is important now to build upon the baseline knowledge derived from these studies to obtain trend data through surveillance studies

⁵ Recommendation 1 for an expanded definition of research is discussed on page 23.

that can aid in pinpointing both problems and progress in combating mental disorders across the age spectrum.

In addition to the pioneering community surveys of mental disorders in adults already conducted, recent developmental work in the epidemiology of child and adolescent disorders has paved the way for progress in this area as well. NIMH now needs to capitalize on these advances to obtain national data on incidence and prevalence of disorders in children and adolescents and the risk and protective factors germane to these disorders. Prospective longitudinal cohort studies are necessary to aid in identifying premorbid risk and protective factors that are powerful and potentially malleable, as well as changes in the expression of mental disorder across the life span. These data are essential for planning and prioritizing prevention research and other key components of the NIMH research portfolio.

> Recommendation 3:

Stimulate Pre-Intervention and Intervention Studies of Early Childhood Risks for Adverse Developmental Outcomes

o NIMH should encourage pre-intervention studies of prenatal, perinatal, and early-life risk and protective factors that are relevant to a variety of negative mental health outcomes in childhood, adolescence, and adulthood. Intervention trials focused on modifying these risk and protective factors should be designed to enable long-term follow-up to test effects on the development of mental disorders and adverse outcomes across developmental periods.

For example, NIMH should promote studies of children at high risk for mental disorders as a result of biological or environmental aspects of parental mental illness and other adverse prenatal and perinatal conditions. The high-risk approach should be expanded across disorders to develop hypothesis-based research on risk and protective factors for multiple outcomes, as well as those that convey increase risk of specific outcomes. Integration of both biological and psychosocial factors is a critical component of the next generation of risk studies.

Adverse early experiences appear to place individuals at risk for a range of disorders and subclinical conditions. Therefore, placing special emphasis on risk and protective factors in early life that may affect a variety of mental health outcomes, such as parenting style and nurturance and their relationship to parental psychopathology, could be a particularly effective preventive strategy.

> Recommendation 4:**Expand Research on Depression and Anxiety Across the Life Span**

o NIMH should facilitate rapid progress in research on the prevention of depression and anxiety disorders in children, adolescents and adults, using a wide range of strategies. This focused effort is justified by the extensive morbidity, disability, and mortality attributable to depressive disorders and by the opportunity for research that can lead to community-based tests of these interventions as well as to dissemination studies. NIMH should support all levels of prevention research on depression and anxiety, particularly with respect to their comorbidity with one another, and with medical illness across the lifespan.

Emerging research findings now provide a firm basis for intervention studies to prevent depressive disorders and anxiety disorders. First, epidemiologic studies indicate that major depressive disorder and anxiety disorders place a serious burden of suffering on the American public, and developmental psychopathology studies have provided considerable evidence about risk factors for the development of depression. Second, prevention studies in both community populations and in clinical settings provide encouraging evidence of the efficacy of specific, well-characterized interventions in preventing the onset and relapse of depressive episodes. Emerging evidence also suggests that there are several strategies to prevent and minimize disability related to anxiety disorders. These research advances provide an important opportunity to accelerate the development of multiple levels of effective preventive intervention strategies as well as mechanisms for their delivery to the public.

Major depression currently ranks as the fourth leading cause of illness-related disability affecting the world's population, and by 2020 is projected to rank second. Depression is often recurrent, a major source of suicide, and strongly associated with a number of other disorders (e.g., drug abuse, social phobia and panic disorder, and physical illness). Findings from large-scale community surveys indicate that as many as one-quarter of the U.S. adult population may suffer in their lifetimes from depression, anxiety, or their combination. Like the depressive disorders with which they often co-occur, anxiety disorders tend to be chronic, and are associated with significant psychological suffering and distress, physical illness, and even death.

Diverse biological and psychosocial risk factors for major depression have been identified, including a genetic predisposition, major negative life events (e.g., unemployment, divorce or separation), medical illness, ruminative coping style, and gender. Although the mechanisms by which these risk factors lead to depression are not well understood, identification of these risk factors provides an opportunity to develop selective and indicated preventive interventions. Shifting from universal to selective and indicated preventive strategies based on high symptom levels of

depression and/or a history of parental depression has led to a dramatic improvement in the outcome of prevention studies of depression. Likewise, a recent controlled preventive intervention study of newly unemployed workers revealed a decrease in depressive episodes over a 2-year period following the intervention. Similarly, in clinical settings, long-term preventive maintenance treatment programs have been shown to prevent recurrence for up to 5 years among patients with major depression who previously had been experiencing episodes every 18 months to 2 years. More recently, similar prevention studies have been successfully applied to anxiety disorders in youth. Future studies that integrate both depression and anxiety in preventive intervention efforts are strongly recommended.

> Recommendation 5:

Refine and Advance the Empirical Basis for Conduct Disorder Prevention Research

o NIMH should integrate a growing body of basic research on the biological, psychosocial, and environmental roots of conduct disorder and its correlates and foster the inclusion of multiple risk indicators in prevention trials of conduct disorder and associated behavioral problems in children, adolescents, and young adults. To identify children at highest risk for conduct disorder and its consequences, methodologic studies should be encouraged to assess conduct symptoms and correlates. Intervention studies should be based on empirical findings on how biological, psychological, and community influences affect the development of conduct disorder and on developmental periods likely to be especially responsive to intervention. Of particular importance is research to strengthen the knowledge base on conduct and other behavior problems that emerge during adolescence. NIMH should actively seek collaborations with other relevant organizations and agencies to support such studies.

Conduct disorder, attention deficit/hyperactivity disorder, and developmental learning disorders are leading causes of educational failure, secondary mental disorders including substance abuse and depression, accidents, injuries, unemployment, physical illness, and criminal activity. They therefore have widespread implications beyond the mental health system. Youth with behavior problems have been targets of study in the education system, the criminal justice system, social services, and health care facilities (both general medical services as well as those for mental and substance abuse disorders). Several promising prevention programs have generated data regarding effective targets and program features for preventing the development of conduct disorder and its consequences. *However, the cost-benefit ratio of such programs must be evaluated systematically to determine resource allocations across all domains of mental disorders.*

Research is necessary to provide basic information regarding the classification, measurement, and pathways to the development of conduct disorder, as well as the links between conduct disturbances and other domains of psychopathology, including attention deficit/hyperactivity disorder, substance use disorders, and affective disorders. Although there is abundant information on the pathways and risk factors for the development of conduct problems, interventions that address the multidisciplinary integration of risk factors have only recently been implemented in treatment and prevention programs. Further studies are needed to examine how developmentally specific individual, social, and biologic risk factors interact with their broader familial, community, and cultural contexts.

Several major considerations should be highlighted in the design and support of future studies: 1) Before embarking on new, large-scale studies in this area, NIMH should carefully evaluate and integrate results from ongoing preventive trials of conduct disorder in which it is investing considerable resources to modify multiple risk factors for early-onset conduct disorder; 2) NIMH should encourage development of studies of adolescent-onset conduct disorder, which may require different prevention strategies than studies of childhood-onset conduct disorder, since these disorders are associated with different correlates and risk factors; and 3) Future prevention studies should incorporate in their design and evaluation comorbidity between conduct disorder and other psychiatric disorders, including attention deficit/hyperactivity disorder, depression, and substance abuse disorders.

> Recommendation 6:

Broaden Disorders and Populations Targeted for Prevention Research

o NIMH should broaden the disorders and populations targeted for intervention in four ways: 1) expand the scope of disorders targeted for intervention; 2) stimulate studies for reducing relapse; 3) increase preventive interventions with larger social units, such as families, peers, schools, and communities; and 4) stimulate studies of risk and protective factors and processes and interventions in specific ethnic groups.

o NIMH should expand the scope of its prevention research program to encompass disorders and types of populations now underrepresented in the portfolio, with an emphasis on severe and persistent disorders (e.g., schizophrenia, bipolar disorder, anxiety disorders, and personality disorders).

Certain disorders are underrepresented in the NIMH prevention research portfolio, such as schizophrenia, severe personality disorder, and other chronic and disabling disorders. Schizophrenia is a particularly important frontier for prevention research, given its extremely high human and financial cost to those who are ill, their families, and society at large. More studies are needed that build on a growing international

body of research knowledge to lay the groundwork for indicated prevention interventions for schizophrenia, as well as the prevention of comorbidity, disability, and relapse. More specifically, NIMH should: a) extend *community-based* studies beyond depressive disorders and conduct disorder to include anxiety disorders, schizophrenia, and substance abuse; b) extend *clinically based* studies beyond depressive and anxiety disorders to include bipolar disorder, schizophrenia, and severe personality disorders; c) extend relapse- and disability-prevention studies beyond depression and schizophrenia to include bipolar disorder and anxiety disorders.

While not focused necessarily on any particular mental disorder, one important and challenging part of the NIMH prevention research domain is the prevention of suicide. It is a very difficult area for research because completed suicide occurs infrequently, even in populations with mental illnesses, and the relationship between preventing suicidal thoughts and preventing suicidal behavior is not yet clear. NIMH should use a variety of means--including convening methodologic experts--to encourage the development of new methodologies for studying suicide and suicide prevention. It should also foster a developmental approach to suicide prevention research that examines similarities and differences in risk and protective factors for severely self-destructive behavior in pre-adolescence, adolescence, adulthood, and old age. NIMH should collaborate with the Centers for Disease Control, whose preventive mandate includes the prevention of suicide.

o NIMH should stimulate studies of biological and psychosocial intervention approaches--singly and combined-- for reducing relapse and disability in many major mental disorders. Research on relapse prevention should include bipolar disorder and anxiety disorders in addition to those disorders currently under study--primarily schizophrenia and depression.

In disorders known to have high relapse potential, acute treatment studies (often involving 6 weeks of treatment or less) are insufficient. Indeed, well-planned relapse prevention should be considered a part of clinical trials.

o The targets for preventive strategies should be broadened to increase interventions with larger social units, such as families, peers, and schools and communities, where research evidence supports their effects on increasing or decreasing the likelihood of mental disorders. Increased research should examine how these social environments interact with individual-level factors and with each other to affect the development, onset, course, and recurrence of mental disorders, and how to collaborate with communities to develop efficacy, effectiveness, and dissemination trials.

o NIMH should stimulate studies of risk and protective factors and processes that affect the development of mental disorders in specific cultural and ethnic

groups, and encourage the development of preventive interventions that are culturally appropriate and effective.

> Recommendation 7:

Expand Studies on Comorbidity Prevention

o NIMH should sponsor a research effort to identify systematically risk and protective factors for co-occurring illnesses, with particular attention to the links between mental and substance-abuse disorders, and between mental and medical disorders. These studies should focus on identifying the risk factors and developmental processes—including biological, psychological, family, and community influences—that lead some individuals to have more than one disorder.

o Based on such pre-intervention studies, the Institute should encourage translation of strong empirical findings into the design and testing of both community-based and clinically based interventions to prevent the development of comorbid disorders.

The robust epidemiologic evidence of the high magnitude of comorbidity among mental disorders (fully half of all psychiatric patients have more than one mental disorder) and between mental disorders and other disorders has important implications for prevention research. Individuals with co-occurring disorders tend to have more serious disability, greater severity, worse outcome and poorer treatment response than those with a single disorder. In addition, some relatively predictable trajectories have been identified for the accretion of comorbidities. For example, early anxiety, attention deficit disorder and conduct disorder are all related to the subsequent onset of depression; and nearly all of the mental disorders are associated with substance use disorders. Potential interventions to prevent comorbid disorders--such as modifying common risk factors that lead to multiple comorbid disorders, or treating symptoms or consequences of primary disorders that lead to the onset of secondary disorders--have received relatively little attention but may have considerable promise.

Designing effective prevention programs for co-occurring disorders will require substantial pre-prevention research to investigate how certain comorbid associations occur. Common etiologic processes may lead to diverse sets of comorbid disorders or diverse etiologic processes may lead to specific sets of comorbid disorders. Prevention and intervention strategies to prevent co-occurring disorders need to build on pre-intervention research that clearly differentiates primary and secondary disorders and identifies the causal mechanisms that lead from one disorder to the next. NIMH should follow the 1993 recommendations of Kessler and Price regarding strategies for studying the mechanisms for comorbidity and assessing the implications of comorbidity for prevention. Family and twin studies, as well as prospective longitudinal cohort

studies are particularly important paradigms that should be encouraged to address mechanisms for how and why some mental disorders cluster together in individuals.

To identify linkages between mental and physical disorders, NIMH should stimulate interdisciplinary studies that include pilot intervention studies designed to clarify these interactions and suggest potential targets for more extensive trials. Such trials should examine both the prevention of adverse physical health consequences in people with mental illness and the prevention of mental disorders in those with physical illness and disability. NIMH should work with staff of other NIH institutes, the NIH Office of Disease Prevention and the NIH Office of Behavioral and Social Sciences Research to co-fund initiatives in this area and to encourage cross-fertilization across prevention research areas related to mental disorders, other chronic illnesses, and infectious diseases.

> Recommendation 8 :

**Develop a Program of Preventive Services Research,
Including Prevention Policy Research**

o Given the paucity of preventive services research in the NIMH portfolio, NIMH should provide both the staffing and financial resources needed to stimulate and nurture the new research area of preventive services research, with the following areas of emphasis:

- NIMH should support trials of well-assessed preventive interventions in various real-world settings under diverse organizational and financing frameworks. Because of the potentially high cost of this research, the Institute should carefully select the most promising interventions, and should vigorously seek collaborative funding with other agencies and/or private foundations.

- NIMH should foster dissemination research to discover how preventive interventions already shown to be effective can be disseminated to new settings, and how they can be implemented and maintained.

- NIMH should encourage studies that explore high-priority preventive services research issues, such as: 1) the delivery, cost, and financing of preventive services; 2) the assessment and comparison of existing community-based preventive services to identify candidates for more systematic study ; and 3) the development of improved methods for specifying and measuring the expected outcomes of short- and long-term preventive interventions, especially functional outcomes of preventive services, such as individual productivity, cost-efficacy, and cost-offset.

- NIMH should stimulate research on how changes in social and economic systems, policies, and laws, as well as social and cultural norms may affect the prevention of mental disorders.

An interest in translational research--a high-priority issue for NIH and NIMH--means discovering through systematic studies how research findings are and could be used in real-world settings. In fact, the development of research-based preventive interventions is not complete until they have been used and assessed in such settings and service systems. It is precisely at this final research stage, however, that the translation process often founders. Some promising prevention research findings never leave the pages of research journals, while others are adopted outside the research community with no systematic tracking of where and how often they are implemented--and in what form, to what effect, and at what cost. Furthermore, a small number of scientifically validated prevention interventions compete in the real world with a vast array of prevention approaches of untested and unproven merit.

Given the need for research to inform decisions about the provision, cost, financing, and improvement of mental health preventive services in a variety of clinical and community settings--including decisions about the allocation of health care resources through managed care--the current lack of NIMH preventive services research is of particular concern. Overcoming this large research gap will require a multifaceted NIMH program of assessment and capacity-building to give impetus to this important area of research. Broadened support is needed to stimulate researchers to conduct preventive services studies and to foster continuity in the cycle of preventive services research implementation. Recruitment to the prevention field of scientists with training in health economics is a particularly important priority.

In a developing research area such as preventive services research, attempts to strengthen the science by stressing hypothesis-testing and model-driven studies may undervalue the importance of descriptive studies that incorporate measures of real outcomes. However, rigorous, descriptive studies--particularly those that capitalize on the natural variation of similar types of service delivery across settings--provide an invaluable resource for later hypothesis generation, and should be encouraged, NIMH needs to foster studies of the natural history and outcome of: a) interventions generated within the service community that have not yet had systematic assessment; and b) the translation of systematically developed prevention research interventions from the laboratory setting into the community. Studies of the latter type should include both the cost effectiveness and the efficacy of that translation.

A problem in the translation of **all** intervention results to services research, not just in the prevention area, is the lack of crosscutting expertise. Intervention researchers rarely know how to examine their results in services settings; services researchers rarely seek to test interventions proven to work in academic or other research settings.

NIMH therefore needs to expand the pool of researchers qualified to conduct preventive services research and encourage cross-training and collaboration between health services researchers and prevention researchers focused on mental disorders. Collaboration is likely to be particularly fruitful in settings with natural access to the populations receiving preventive services, such as primary care offices, schools, courts, homes, and day-care centers. Working in such settings can enhance the integration of effective mental health interventions into service settings outside the specialized mental health service delivery system.

> Recommendation 9:

Encourage and Support Long-Term Followup in Prevention Research

o NIMH/NIH should facilitate essential longitudinal followup in prevention research through appropriate grant review and funding mechanisms.

Long-term studies are essential for understanding the etiology of mental disorders and the enduring impact of preventive interventions. At present, two-thirds of NIMH-funded community-based preventive interventions report followup assessments ranging from 1 year to more than 6 years, yet we now know that the most desired effects may be observed as long as 15 years after an intervention. Among prevention intervention studies of *clinical* populations, approximately one-half report 1-year to 3-year followup assessment of patients.

Many approaches need to be used to maintain study populations and encourage long-term followup. Initial review groups (IRGs) should be educated about the critical importance of longitudinal followup studies for prevention research. When reviewing ongoing longitudinal studies and confronted by grant proposals with mild flaws or areas requiring clarification, reviewers should be encouraged to safeguard research continuity by using the full array of available responses, which include deferral and having direct discussions with applicant investigators as part of the review process to clarify issues and avoid unnecessary funding lapses when sample maintenance is critical. Other approaches include program staff's offering bridging grants to maintain samples where reviews indicate a high likelihood of funding of longitudinal followup studies; offering small tracking grants to facilitate contact with longitudinal samples between assessment points; and allowing investigators to propose studies of longer than 5 years duration when justified by scientific objectives and methods. However, proposals should be reviewed for suitability for long-term funding, and must receive periodic reviews of program achievements.

> Recommendation 10:**Build Prevention Research Capacity, Especially through Training Grants**

- o NIMH/NIH training grants should provide support for the training infrastructure, such as salaries for training directors and increased training-related expenses**
- o NIMH/NIH stipends for research trainees should be raised above current levels--to at least \$30,000 a year for postgraduate trainees--with no decrease in numbers of training slots. Low stipends are a deterrent to individuals from poor economic backgrounds and/or with loan debts, and exacerbate the shortage of minority prevention researchers.**
- o NIMH should explore development of an initiative to recruit qualified minority researchers into the field of mental disorders prevention research.**
- o NIMH-funded training and fellowship directors should be encouraged to combine trainees from more than one discipline (e.g., epidemiology and behavioral science, or statistics and biological science), and prevention research training programs should expose trainees to the concepts and methods of a wide variety of disciplines relevant to prevention research.**
- o NIMH should seek or develop training mechanisms to encourage investigators in other research fields (e.g., physical disease prevention research, health services research, treatment research) to collaborate with or conduct prevention research related to mental disorders.**

There is a pressing need to train increased numbers of prevention researchers to continue the methodological and substantive advances essential for this field. In addition, in mental disorders prevention research, as in many other important mental health research areas, minority researchers are under represented. A number of current limitations on training grants provide disincentives that hamper recruitment and the systematic development of the field. NIMH needs to address these issues immediately. From a more long-term perspective, NIMH should periodically assess the impact of its training programs on the growth, stability, and quality of fields such as prevention research and epidemiology research.

Sustaining the health and growth of prevention research as a field requires an ongoing supply of researchers of many types and disciplines. Because training in this area should foster a close interchange between research on prevention of physical illness and on prevention of mental illness (as occurs in the NIH HIV research program), NIMH should stimulate collaboration in training-related initiatives across NIH institutes and other components of the Public Health Service. For example, NIMH should work with

NIH to encourage minority students as early as high school to consider careers in prevention research.

o While investigator-initiated research projects (RO1s) are and should continue to be the mainstay of the NIMH prevention research program, NIMH should fund and stimulate use of a variety of appropriate support mechanisms for prevention research and training.

Awareness of the relevance of basic science for prevention could be expanded by issuing requests for applications that solicit basic research studies with clearly stated implications for prevention, and through support of collaborative studies between basic, clinical, and prevention research. NIMH could and should also do more to stimulate cooperative research grants when multisite studies are needed. It should encourage systematic consideration of multidisciplinary collaborations in the review of prevention research. In addition, the Institute should encourage creative use of supplements to existing research grants to stimulate and expand prevention research training opportunities. The Workgroup endorses continued NIMH support of prevention research centers, which can be a stimulating and trend-setting force for the field. But the Institute should strongly encourage centers to foster interdisciplinary research and training of the highest standard. Toward this end, center staff should be required to compete for RO1 grants and training grants that amplify their areas of concern.

V. RECOMMENDATIONS FOR NIMH LEADERSHIP AND CONTINUITY IN PREVENTION RESEARCH ACTIVITIES

Context: Reorganization of NIMH and Grant Review Process

The Workgroup supports many of the principles that have guided the recent structural reorganization of NIMH. Those principles include an overarching concern with enhancing opportunities for transfer from basic research to clinical practice and services delivery, as well as the recognition that research on the prevention of mental disorders needs to be more closely linked to basic behavioral science research and to AIDS prevention research. The new structure of prevention research programs at NIMH provides an exciting opportunity to view prevention research through a new lens, and to consider new types of collaboration, cooperation, and cross-fertilization with related and vital areas. However, the Workgroup is concerned about the potential for dividing and diffusing responsibility for identifying new scientific opportunities and encouraging the systematic transformation of promising leads into practical prevention interventions. Thus, the recommendations to follow address critical leadership issues raised by the new structure of prevention research

Given the fact that the reorganization of NIMH grant review is still in an early stage, it would be premature for the Workgroup to provide specific guidance. However, it is clear that any decision regarding the locus and structure of review of prevention research--whether within NIMH alone or within an NIH-wide review committee--must allow for adequate multidisciplinary representation on review committees and must encourage the conduct of multidisciplinary research.

Recommended Initiatives

> Recommendation 11:

Provide Scientific Leadership for Prevention Research

o NIMH should support continuation of the NIMH staff's Prevention Research Consortium and recommends the following revised mission: The Consortium should serve as a forum for prevention research, collaboration, integration, and cooperation across NIMH research programs. Its functions should include stimulating linkages among risk-factor, preventive intervention, and preventive services research and fostering the rapid translation of risk-factor research into the development of prevention trials.

o NIMH should convene a standing Prevention Research Advisory Group (PRAG), chaired by a scientist with interdisciplinary background and

experience in prevention research, to promote and direct prevention research and training within NIMH and to provide guidance to the NAMHC and the Director of NIMH. That group should represent expertise in epidemiology, developmental psychopathology, preventive intervention development, prevention science, methodology, and the conduct of community-based prevention trials.

Responsibilities of the PRAG should include: recommending priorities for targets of prevention research; encouraging interdisciplinary research; heightening investigators' awareness of the importance to prevention of basic work on risk processes; and facilitating communication and integration of research between NIMH and other relevant agencies. This group would also assist the NAMHC in overseeing the integration of pre-intervention and prevention intervention research to maximize knowledge gained in relevant areas such as genetics and developmental neuroscience and to alert those engaged in prevention research to relevant scientific advances. Members of the NAMHC should be ex officio members of the PRAG, with NIMH division directors serving as ex officio research information resources.

The impact of the recent reorganization of NIMH on prevention research and its leadership is still unknown. Prevention research at NIMH was never totally centralized under the former Prevention and Behavioral Medicine Research Branch and its predecessors. However, the Branch served as a single, identifiable focal point for pre-intervention and intervention research within a single division.

At present, there is no single focal point for prevention; the pre-intervention and intervention programs are in separate divisions. While the current organization has potential benefits--including improved linkages with clinical and basic research programs that are relevant to prevention research--the special mechanisms recommended in this Section are intended to assure that essential linkages and leadership in fact occur.

o To start the process of assessing a group of scientific issues critical to the development of prevention research at NIMH, the PRAG should collaborate with the NIMH Prevention Research Consortium to plan and execute in the next year a series of Prevention Research Summits, which resemble consensus conferences. They should summarize the state of knowledge about risk and protective factors and processes, preventive interventions, and prevention research for each major mental disorder and identify common risk and protective factors across disorders. To encourage a unified view within the field of its major accomplishments, scientific opportunities, and needed research, a summit should recommend to the NAMHC the highest research priorities across disorders and phases of research, based on public health

need and scientific opportunity.

Foci of these summits should include: a) identifying potentially malleable population-level risk and protective factors that have been scientifically demonstrated to alter the probability of developing mental disorders and that should be targeted in universal and selective prevention trials; and b) developing a consensus on major risk factors for mental disorders that should be targeted by selective and indicated interventions. The broad range of risk factors considered should include severely stressful life experiences (such as childhood experiences of sexual and physical abuse), medical illness, and parental mental disorder. A summit should also identify processes that lead from risks to disorder, and should include a focus on biological, psychological, and social processes and the relations among them.

Methodologic issues relevant to adequate evaluation of prevention programs should also be addressed by the summits. Measurement of risk factors and target disorders is a critical aspect of preventive intervention research. Reliable measures of these domains with good predictive validity are critical to identify targets and measure the outcome of prevention programs. Ongoing efforts to enhance measurement of psychiatric disorders and relevant risk factors in adult and child epidemiology must be represented adequately in the prevention field. Likewise, statistical approaches that capture processes rather than pre-and-post measures will provide a more realistic representation of both the pathways to mental disorders and the changes produced by prevention programs.

Prevention researchers, treatment researchers, and services researchers supported by NIMH are all concerned with the development of efficacy and effectiveness trials in their respective arenas. Currently, however, these researchers do not communicate regularly, nor is there a clear sense of how their respective research programs are related and could benefit one another. For example, prevention researchers have pioneered strategies for moving from population-based research to randomized intervention trials; that knowledge could be of critical importance to treatment researchers and services researchers. Conversely, innovations developed by services researchers who have focused on issues of services access and cost effectiveness could be of immense value to prevention researchers and intervention researchers. NIMH should expand the envelope of knowledge around research methodology by fostering these linkages and exchanges.

NIMH should also hold a series of conferences bringing together intervention researchers from AIDS research centers, clinical research centers, prevention research centers, and other intervention sites that draw on and integrate a wide range of intervention technologies, including biological, behavioral, organizational, and community-based approaches. One product could be a set of initiatives for research on common behavior-change issues, such as encouraging motivation for change,

maintaining change, and preventing recurrence of problems. In addition, NIMH should convene prevention, treatment, and services researchers in a series of workshops to explore strategies for resolving methodological problems and developing creative new methods for efficacy and effectiveness research.

> Recommendation 12:

Provide Leadership in Prevention Grant Review

o Because of the essential interdisciplinary nature of prevention research, review panels for NIMH prevention research must be interdisciplinary in composition, including more than one expert in each relevant biological, psychological, and social science research area. Review panels should include experts in epidemiology, developmental psychopathology, methodology, and conduct of community-based prevention trials.

o NIMH/NIH should develop review criteria to maximize the potential for fair review of applications that attempt to bridge disciplinary approaches to prevention research.

The interdisciplinary nature of prevention research is a scientific necessity and an asset for the mental health field. But it presents administrative and review challenges for researchers that NIMH must address and overcome. Of particular concern at present is the review process for NIMH prevention research, which itself is currently undergoing review and likely modification. The plan to have NIMH research proposals reviewed along with proposals from other NIH institutes provides an opportunity to enrich prevention science. Reviewers from other disciplines and areas will bring new perspectives, methodologies, and models to the critical evaluation of NIMH prevention research. At the same time, NIMH-funded research has pioneered advances in prevention science that may not be familiar or well understood by scientists from other institutes. Some examples include the dynamic and iterative relationships between epidemiological research and the design of prevention trials, the critical role of observational methodology, and the increasing importance of new statistical techniques for modeling developmental trajectories.

Unless reviewers are well grounded in these and other areas, some of the most powerful and promising NIMH research may not be properly reviewed by NIH-wide committees. NIMH should develop guidelines to facilitate the selection of reviewers who bring rich and specified competencies and experience to centralized review groups. Additionally, procedures should be developed to orient new reviewers and to provide training as needed on a continuing basis.

In making grant review decisions that affect existing NIMH funding investments in prevention research, reviewers should be encouraged to recognize the rich variety of

ways to develop and test valuable approaches to prevention. The search for scientific rigor--however desirable--should be tempered by public health pragmatism. For example, AIDS prevention research has demonstrated the power of carefully chosen atheoretical studies; such an approach should be given consideration in reviewing mental disorders prevention research.

> Recommendation 13:

Provide Leadership for Cross-Institute and Cross-Agency Linkages

o NIMH should take a leadership role in linking with other components of NIH as well as research and service agencies relevant to the prevention of mental disorders to foster collaborative community trials and to open up avenues for research dissemination.

Collaboration across agencies is vital to share scientific advances, to eliminate redundant efforts, and to make efficient use of resources. Collaborative efforts need to be increased to study common risk and protective factors and processes, and to develop and disseminate efficacious preventive interventions of interest to multiple institutes and agencies. Many federal agencies are supporting and studying interventions that could yield systematic information on mental health outcomes at minimal additional costs. For example, failure to learn in schools and low attachment to school, which are of interest to NIMH as important risk factors for mental health problems, are of interest to the National Institute on Drug Abuse (NIDA) as risk factors for drug abuse and to the Department of Education as risk factors for school failure. NIMH needs to increase collaborative efforts with these and other components of the Federal Government to study common risk and protective factors relevant to mental health outcomes and to develop and disseminate effective preventive interventions of potential interest to many federal and nongovernmental organizations.

> Recommendation 14:

Provide Leadership in Prevention Research Dissemination

o NIMH should build upon the work of its NAMHC Communications Subgroup to develop a plan for disseminating research findings to key target audiences.

A central part of this plan should be the dissemination of prevention research findings--particularly those relating to the cost effectiveness of specific interventions--to researchers, public and private policymakers, service providers, and relevant administrative personnel in health, mental health, educational, and community settings. Whenever possible, these dissemination efforts should be guided by findings from the new NIMH dissemination *research* program to be developed within the proposed new preventive services research program.

Of particular importance, NIMH should take a leadership role in establishing a science-based prevention trial registry that includes mental and behavioral disorders. Just as medicine now relies on registries to promote empirically sound approaches, the prevention field also requires a registry system to identify and classify its trials and scientific findings in an accepted, broad, and inclusive registry system. Such an evidence-based prevention trial registry would enhance the transfer of knowledge to practice and would lead to increased rigor in the prevention field. Prevention trials that are part of a comprehensive prevention trial registry would service as a source for selecting the best designs, measures, and intervention strategies within the domains of both prevention and treatment.

For Further Reading

- Gordon, Robert (1987): An Operational Classification of Disease Prevention. In: *Preventing Mental Disorders: A Research Perspective*, Jane Steinberg & Morton Silverman (Eds). Rockville, MD: Alcohol, Drug Abuse, and Mental Health Administration (DHHS Publication No. (ADM) 87-1492), 20-26.
- Institute of Medicine, Committee on Prevention of Mental Disorders, Division of Biobehavioral Sciences and Mental Disorders (1994). Summary, Appendix A in Patricia J. Mrazek and Robert J. Haggerty (Eds.). *Reducing Risks for Mental Disorders*. Washington, DC: National Academy Press, 493-495.
- NIMH Ad Hoc Committee on Prevention Research (April 1996): *A Plan for Prevention Research for the National Institute of Mental Health: A Report to the National Advisory Mental Health Council*. Bethesda: National Institutes of Health (NIH Publication No. 96-4093).
- Prevention Research Steering Committee (March 9, 1993): *The Prevention of Mental Disorders: A National Research Agenda* (unpublished).

APPENDIX A:

Charge: NAMHC Workgroup on Mental Disorders Prevention Research

The National Advisory Mental Health Council (NAMHC) Workgroup on Mental Disorders Prevention Research was created at the request of Dr. Steven Hyman, Director of the National Institute of Mental Health (NIMH), to review the Institute's current prevention research portfolio and, of particular importance, to identify gaps and opportunities for future research. At least two major issues have given rise to this process: recognition of the value of the prevention research perspective (including its developmental approach and its focus on nonclinical as well as clinical settings); and a growing realization that severe mental disorders, which are now underrepresented in the NIMH prevention research portfolio, are not likely to be amenable to primary prevention interventions with our current knowledge base. Given these and other issues bearing on NIMH prevention research, key areas for the Workgroup's consideration include:

1. Broadening the disciplinary base of prevention research--such as involving treatment researchers (including pharmacologists) and services researchers--and forging mutually enriching links with both the treatment research and services research communities;
2. Developing better connections between prevention research, basic behavioral science, and research on genetic and other risk factors for mental disorders;
3. Expanding the domain of NIMH prevention research beyond "primary prevention" to include: a) the early identification of symptoms in a variety of mental disorders as a basis for early intervention and the prevention of possible comorbidity (e.g., alcoholism as a complication of social phobia) or complication (e.g., agoraphobia as a result of panic disorder); and b) the use of interdisciplinary (including both pharmacologic and behavioral) approaches in relapse prevention in mental disorders with recurrent or worsening courses;
4. Sharing with other areas of prevention research the knowledge gained in the prevention of behaviors that confer risk of HIV infection. This knowledge base includes: approaches to identifying populations at risk; appropriate methodologies to motivate behavior change; considerations of community in initiating and maintaining behavioral change; and approaches for maintaining behavioral change over long time periods.

5. Extending beyond childhood the developmental perspective, which has been an important tool in some areas of prevention research, and exploring its potential benefits in research aimed at preventing HIV infection. (However, the prevention research portfolio of the NIMH AIDS research program is not a focus of the Workgroup's review.)

6. Including variables related to alcohol and drug abuse in prevention research on mental disorders.

Meeting under the leadership of Dr. Thomas Coates, an incoming Council member, the 10*-person Workgroup should submit its conclusions and recommendations to the NAMHC in a brief (less than 30 pages) report for consideration at the Council's September 1997 Policy Session.** Because a substantial funding increase for the Institute is unlikely given the current budgetary environment, the Workgroup's recommendations should not assume the availability of new funding.

*Initially 12 members (1/97)
**Extended to February 1998

APPENDIX B:

Roster: National Advisory Mental Health Council

(All terms end 9/30)

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